IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

First Named Inventor:	Laurent Massoulie	Attorney Docket No.:	304871.02
Application No.:	10/698,846	Group Art Unit:	2151
Filed:	10/30/2003	Examiner:	Walsh, John B.
Customer No.:	22971	Confirmation Number:	9313
Title: Self–Organizing Overlay Networks			

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AMENDMENT/RESPONSE TO FINAL OFFICE ACTION

Sir:

Please change the attorney docket number to 304871.02.

In response to the Final Office Action mailed 03/28/2006, please amend the above–identified application as follows:

Amendments to the Specification begin on page 2 of this amendment.

Amendments to the Claims are reflected in the listing of claims that begins on page 3 of this amendment.

Remarks begin on page 10 of this amendment.

Amendments to the Specification:

Applicant presents replacement paragraphs below indicating the changes with insertions indicated by underlining and deletions indicated by strikeouts and/or double bracketing.

Please replace line 2 of page 5 with the following:

"capabilities.   The network 100 includes nodes 102, 104, 106, 108, 112, and 110[[114]],"

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings of claims in the application. Applicant has submitted a new complete claim set showing marked up claims with insertions indicated by underlining and deletions indicated by strikeouts and/or double bracketing.

Listing of Claims:

1.   (Currently Amended) A method comprising:

determining a first cost associated with a logical network link between an active node and a first neighboring node of the active node within an overlay network;

determining a second cost associated with a proposed logical network link between the first neighboring node and a second neighboring node of the active node within the overlay network; and

reorganizing the overlay network to replace the logical network link with the proposed logical network link in the overlay network with a reorganization probability based on the first and second costs and the <u>size of a neighbor list of the active node, the size of a neighbor list of the first neighboring node, and the size of a neighbor list of the second neighboring node</u> ~~degrees of the nodes~~.

2.   (Original)   The method of claim 1 wherein the reorganization probability is dependent upon a change in an energy function caused by replacing the logical network link with the proposed logical network link in the overlay network.

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3.   (Original)   The method of claim 1 wherein determining the first cost comprises:

        measuring a round trip delay time between the active node and the first neighboring node of the active node within the overlay network.

4.   (Original)   The method of claim 1 wherein determining the second cost comprises:

        triggering a measurement of a round trip delay time between the first and second neighboring nodes of the active node within the overlay network.

5.   (Original)   The method of claim 1 wherein determining the first cost comprises:

        determining an available bandwidth in the logical network link between the active node and the first neighboring node of the active node within the overlay network.

6.   (Original)   The method of claim 1 wherein determining the second cost comprises:

        determining available bandwidth in the proposed logical network link between the first and second neighboring nodes of the active node within the overlay network.

7.   (Original)   The method of claim 1 further comprising:

        randomly selecting the first neighboring node of the active node from a local address list of the active node.

8.   (Original)   The method of claim 1 wherein the overlay network is an
unstructured overlay network.

9.   (Original)   The method of claim 1 further comprising:
        restricting a subset of neighboring nodes of the active node from reorganization.

10.   (Currently Amended) A computer program product encoding a computer
program for executing on a computer system a computer process, the computer process
comprising:
        determining a first cost associated with a logical network link between an active
node and a first neighboring node of the active node within an overlay network;
        determining a second cost associated with a proposed logical network link
between the first neighboring node and a second neighboring node of the active node
within the overlay network; and
        reorganizing the overlay network to replace the logical network link with the
proposed logical network link in the overlay network with a reorganization probability
based on the first and second costs and the size of a neighbor list of the active node,
the size of a neighbor list of the first neighboring node, and the size of a neighbor list
of the second neighboring node degrees of the nodes.

11.   (Original)   The computer program product of claim 10 wherein the
reorganization probability is dependent upon a change in an energy function caused by
replacing the logical network link with the proposed logical network link in the overlay
network.

12. (Original) The computer program product of claim 10 wherein determining the first cost comprises:

measuring a round trip delay time between the active node and the first neighboring node of the active node within the overlay network.

13. (Original) The computer program product of claim 10 wherein determining the second cost comprises:

triggering a measurement of a round trip delay time between the first and second neighboring nodes of the active node within the overlay network.

14. (Original) The computer program product of claim 10 wherein determining the first cost comprises:

determining an available bandwidth in the logical network link between the active node and the first neighboring node of the active node within the overlay network.

15. (Original) The computer program product of claim 10 wherein determining the second cost comprises:

determining available bandwidth in the proposed logical network link between the first and second neighboring nodes of the active node within the overlay network.

16. (Original) The computer program product of claim 10 wherein the computer process further comprises:

randomly selecting the first neighboring node of the active node from a local address list of the active node.

17.   (Original)   The computer program product of claim 10 wherein the overlay network is an unstructured overlay network.

18.   (Original)   The computer program product of claim 10 wherein the computer process further comprises:

restricting a subset of neighboring nodes of the active node from reorganization.

19.   (Currently Amended) A system comprising:

a cost computing module determining a first cost associated with a logical network link between an active node and a first neighboring node of the active node within an overlay network and determining a second cost associated with a proposed logical network link between the first neighboring node and a second neighboring node of the active node within the overlay network; and

a reorganization module reorganizing the overlay network to replace the logical network link with the proposed logical network link in the overlay network with a reorganization probability based on the first and second costs and the size of a neighbor list of the active node, the size of a neighbor list of the first neighboring node, and the size of a neighbor list of the second neighboring node degrees of the nodes.

20.   (Original)   The system of claim 19 wherein the reorganization probability is dependent upon a change in an energy function caused by replacing the logical network link with the proposed logical network link in the overlay network.

21.   (Original)   The system of claim 19 wherein the first cost includes a round trip delay time between the active node and the first neighboring node of the active node within the overlay network.

22. (Original) The system of claim 19 wherein the second cost includes a round trip delay time between the first and second neighboring nodes of the active node within the overlay network.

23. (Original) The system of claim 19 wherein the first cost includes available bandwidth in the logical network link between the active node and the first neighboring node of the active node within the overlay network.

24. (Original) The system of claim 19 wherein the second cost includes available bandwidth in the proposed logical network link between the first and second neighboring nodes of the active node within the overlay network.

25. (Original) The system of claim 19 further comprising:

a neighborhood node selector randomly selecting the first neighboring node of the active node from a local address list of the active node.

26. (Original) The system of claim 19 wherein the overlay network is an unstructured overlay network.

27. (Original) The system of claim 19 wherein the first and second neighboring nodes of the active node are selected from a neighbor list maintained by the active node.

28. (Original) The system of claim 19 wherein the first and second neighboring nodes of the active node are selected from a neighbor list and further comprising:

an isolated neighbor list restricting a subset of neighbor nodes of the active node from

reorganization.